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EXAMINER

MATTIS, JASON E

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/518,212	Applicant(s) CHRISTENSEN ET AL.	
	Examiner JASON E. MATTIS	Art Unit 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/27/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the Request for Continued Examination filed 1/27/09. It is noted that the set of claims filed by the Applicant on 5/13/08 included new claims 15-18; however, the set of claims filed 11/14/08 did not include claims 15-18, but did also not indicate that claims 15-18 have been canceled. Thus the current status of claims 15-18 is unclear.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lydon et al. (U.S. Pat. 6680939 B1) in view of Haq et al. (U.S. Pat. 6885635 B1).

With respect to claim 1, Lydon et al. discloses a linearly expandable router (See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a 1024x1024 routing switch, which is a linearly expandable router).

Lydon et al. also discloses a first router component including a first routing engine having input and output sides, a second routing component including a third routing

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engine having input and output sides, and a third routing component including a fifth routing engine having input and output sides (**See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch comprising routers 50, 60, and 70, which correspond to a first, second, and third routing component including a first, third, and fifth routing engine respectively, and for reference to each of the routers 50, 60, and 70 having input and output sides**). Lydon et al. further discloses a first link, second link, and third link coupling the input sides of the first, third, and fifth, routing engines together (**See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to each of router 50, 60, and 70 including expansion terminals that are used to link the inputs of the routers 50, 60, and 70 to each other using three links**). Lydon et al. also discloses the first, third, and fifth routing engines arranged in a fully connected topology (**See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the connections between routers 50, 60, and 70 allowing data at any input of the routers 50, 60, and 70 to be coupled to any output of the routers 50, 60, and 70 such that these routers are arranged in a fully connected topology**). Lydon et al. does not specifically disclose each router component including an additional routing engine. Lydon et al. also does not disclose the input sides of each of the additional routing engines being coupled together by links such that the additional routing engines are arranged in a fully connected topology.

With respect to claim 2, Lydon et al. discloses the routing engines each having n inputs and m outputs (**See column 4 line 48 to column 5 line 14 and Figure 4 of**

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Lydon et al. for reference to routers 50, 60, and 70 having 256 inputs and 256 outputs with n and m each corresponding to 256). Lydon et al. also discloses a router formed by the first, third, and fifth routing engines having 3N inputs and 3M outputs **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a router formed by using only routers 50, 60, and 70, and excluding router 80, having 256 times 3 inputs and 256 times 3 outputs).** Lydon et al. does not disclose the inputs and outputs of the additional routing engines of each routing component being redundant of the inputs and outputs of the other routing engine of each routing component.

With respect to claim 3, Lydon et al. discloses the first, second, and third links providing a first and second N addition inputs to each of the first, third, and fifth routing engines **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the links between routers 50, 60, and 70 providing a first and second N addition inputs to each of the routers 50, 60, and 70, for example, the link between router 50 and router 60 provides the 256 inputs of router 60 as additional inputs for router 50 while the link between router 50 and router 70 provides the 256 inputs of router 70 as second additional inputs for router 50).** Lydon et al. does not disclose links between each additional routing engine of the routing components providing first and second N additional redundant inputs to each of the additional routing engines.

With respect to claim 4, Lydon et al. discloses a fourth router component including a seventh routing engine having input and output sides **(See column 4 line 48**

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to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch also comprising router 80, which corresponds to a fourth routing component including a seventh routing engine, and for reference to router 80 having input and output sides). Lydon et al. also discloses a seventh, eighth, and ninth link coupling the input side of the seventh routing engine to the input sides of the first, third, and fifth routing engine respectively **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to of router 80 including expansion terminals that are used to link the inputs of the router 80 to the inputs of routers 50, 60, and 70).** Lydon et al. also discloses the first, third, fifth, and seventh routing engines arranged in a fully connected topology **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the connections between routers 50, 60, 70, and 80 allowing data at any input of the routers 50, 60, 70, and 80 to be coupled to any output of the routers 50, 60, 70, and 80 such that these routers are arranged in a fully connected topology).** Lydon et al. does not specifically disclose the fourth router component including an addition routing engine. Lydon et al. also does not disclose the input sides of each of the addition routing engines being coupled together by links such that the additional routing engines are arranged in a fully connected topology.

With respect to claim 5, Lydon et al. discloses the routing engines each having n inputs and m outputs **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to routers 50, 60, 70, and 80 having 256 inputs and 256 outputs with n and m each corresponding to 256).** Lydon et al. also discloses a

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router formed by the first, third, fifth, and seventh routing engines having $4N$ inputs and $4M$ outputs (**See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a router formed by using routers 50, 60, 70, and 80 having 256 times 4 inputs and 256 times 4 outputs**). Lydon et al. does not disclose the inputs and outputs of the additional routing engines of each routing component being redundant of the inputs and outputs of the other routing engine of each routing component.

With respect to claim 6, Lydon et al. discloses the first, second, third, seventh, eighth, and ninth links providing a first, second, and third N addition inputs to each of the first, third, fifth, and seventh routing engines (**See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the links between routers 50, 60, 70, and 80 providing a first, second, and third N addition inputs to each of the routers 50, 60, 70, and 80, for example, the link between router 50 and router 60 provides the 256 inputs of router 60 as additional inputs for router 50, while the link between router 50 and router 70 provides the 256 inputs of router 70 as second additional inputs for router 50, while the link between router 50 and router 80 provides the 256 inputs of router 80 as third additional inputs for router 50**).

Lydon et al. does not disclose links between each additional routing engine of the routing components providing first, second, and third N additional redundant inputs to each of the additional routing engines.

With respect to claim 16, Lydon et al. discloses that the first, second, and third links are discrete links (**See column 4 line 48 to column 5 line 14 and Figure 4 of**

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Lydon et al. for reference to the link connecting router 50 to router 60, the link connecting router 50 to router 70, and the link connecting router 60 to router 70, each being separate, discrete links). Lydon et al. does not specifically disclose discrete fourth, fifth, and sixth links.

With respect to claims 17 and 18, Lydon et al. does not specifically disclose the first routing engine being redundant of a second routing engine, the third routing engine being redundant of a fourth routing engine, and the fifth routing engine being redundant of a sixth routing engine.

With respect to claims 1-6 and 16-18, Haq et al., in the field of communications, discloses router components including a first routing engine as well as an additional routing engine providing redundancy for the first routing engine **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to a router including two routing engines and processing components with the second routing engine and processing component being redundant of the first routing engine).** Using router components including a first routing engine as well as an additional routing engine providing redundancy for the first routing engine has the advantage of protecting against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to this advantage).**

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Haq et al., to combine using router

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components including a first routing engine as well as an additional routing engine providing redundancy for the first routing engine, as suggested by Haq et al., having the addition routing engines of each routing component being coupled by discrete links in a similar manner as the routers of Lydon et al., with the system and method of Lydon et al., with the motivation being to protect against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails.

With respect to claim 15, Lydon et al. discloses that the first, second, and third links are discrete links **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the link connecting router 50 to router 60, the link connecting router 50 to router 70, and the link connecting router 60 to router 70, each being separate, discrete links)**.

With respect to claim 7, Lydon et al. discloses a linearly expandable broadcast router **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a 1024x1024 routing switch, which is a linearly expandable broadcast router)**. Lydon et al. also discloses at least three router components having a router matrix **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch comprising routers 50, 60, and 70, which are router components each including a router matrix)**. Lydon et al. further discloses a means for coupling the first router matrices of the at least three broadcast router components in a first fully connected topology **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the connections between routers 50, 60, and 70 allowing data at any input of the routers 50, 60, and 70 to be**

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coupled to any output of the routers 50, 60, and 70 such that these routers are arranged in a fully connected topology). Lydon et al. does not specifically disclose each router component including an additional redundant router matrix. Lydon et al. also does not disclose a means for coupling the additional router matrices in a second fully connected topology.

With respect to claim 8, each of the first routing matrices comprising a routing engine coupled between input and output sides thereof **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch comprising routers 50, 60, and 70, each including a routing engine respectively, coupled between input and output sides of the routers).** Lydon et al. does not disclose each of the additional routing matrices comprising a routing engine coupled between input and output sides thereof.

With respect to claim 9, Lydon et al. discloses the routing engines of each of the first routing matrices each having n inputs **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to routers 50, 60, and 70 having 256 inputs with n corresponding to 256).** Lydon et al. does not disclose the routing engines of each of the additional routing matrices each having n inputs.

With respect to claims 10-12, Lydon et al. does not disclose the n inputs of the routing engines of the additional routing matrices being redundant n inputs of corresponding routing engines of the first routing matrices.

With respect to claims 7-12, Haq et al., in the field of communications, discloses router components including a first routing engine and matrix as well as an

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additional routing engine and matrix providing redundancy for the first routing engine and matrix (**See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to a router including two routing engines and processing components with the second routing engine and processing component being redundant of the first routing engine**). Using router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix has the advantage of protecting against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails (**See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to this advantage**).

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Haq et al., to combine using router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix, as suggested by Haq et al., having the addition routing engines of each routing component being coupled by links in a similar manner as the routers of Lydon et al., with the system and method of Lydon et al., with the motivation being to protect against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails.

With respect to claim 13, Lydon et al. discloses a linearly expandable broadcast router (**See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a 1024x1024 routing switch, which is a linearly expandable broadcast**

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router). Lydon et al. also discloses providing first, third, and fifth router matrices each having input and output sides **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch comprising routers 50, 60, and 70, which are router components each including a router matrix and each having input and output sides)**. Lydon et al. further discloses a first link, second link, and third link coupling the input sides of the first, third, and fifth, routing matrices together **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to each of router 50, 60, and 70 including expansion terminals that are used to link the inputs of the routers 50, 60, and 70 to each other using three links)**. Lydon et al. does not specifically disclose each router component including an additional redundant routing matrix. Lydon et al. also does not disclose the input sides of each of the addition routing matrices being coupled together by links.

With respect to claim 14, Lydon et al. discloses providing a seventh routing matrix having input and output sides **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch also comprising router 80, which is a router component including a seventh routing matrix, and for reference to router 80 having input and output sides)**. Lydon et al. also discloses a seventh, eighth, and ninth link coupling the input side of the seventh routing matrix to the input sides of the first, third, and fifth routing matrix respectively **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to of router 80 including expansion terminals that are used to link the inputs of the router 80 to the inputs of routers 50, 60, and 70)**. Lydon et al. does

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not specifically disclose including an addition eighth routing matrix. Lydon et al. also does not disclose the input sides of each of the addition routing engines being coupled together by links.

With respect to claims 13 and 14, Haq et al., in the field of communications, discloses router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to a router including two routing engines and processing components with the second routing engine and processing component being redundant of the first routing engine)**. Using router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix has the advantage of protecting against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to this advantage)**.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Haq et al., to combine using router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix, as suggested by Haq et al., having the addition routing engines of each routing component being coupled by links in a similar manner as the routers of Lydon et al., with the system and method of Lydon et al., with the motivation being to protect against failure of a

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routing engine by providing redundant routing engines as a backups that take over when a routing engine fails.

Response to Arguments

4. Applicant's arguments filed 11/14/08 have been fully considered but they are not persuasive.

First, it is noted that the claim set filed with the Amendment After Final of 11/14/08, which this Office Action is based upon, appears to be incorrect. The previous set of claims filed on 5/13/08 included new claims 15-18; however the claims filed with this Amendment After Final do not include claims 15-18, nor do they indicate that these claims have been cancelled.

Regarding Applicant's argument that:

“While, for expediency purposes, it is not disputed herein that a router of Lydon may inherently have a routing engine, Lydon does not teach that routing engines of different routers are coupled by links in a full connected topology. Rather, Lydon simply discloses that routers themselves are connected by various links for input signal transmission” (See page 11 of Applicant's Remarks/Arguments filed 11/14/08)

the Examiner respectfully disagrees. As noted by the Applicant, Each of the routers 50, 60, 70, and 80 of Lydon et al. inherently must include a routing engine in order for the routers to be able to properly receive, process, and route data from an input to an

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output. Further, as also pointed out by the Applicant, Lydon et al. discloses that each of the routers 50, 60, 70, and 80 are connected by links in a fully connected topology (See column 4 line 48 to column 5 line 15 and Figure 4 of Lydon et al.). In order for the routers 50, 60, 70, and 80 to properly function as an expanded router, as taught by Lydon et al., the routing engines of the routers 50, 60, 70, and 80 also inherently must be connected to one another by the links connecting the routers in order for the routers to properly receive, process, and route data from an input of a first router to an output of a second router. Thus, Lydon et al. inherently discloses routers 50, 60, 70, and 80 including routing engines that are linked to one another in a fully connected topology, as claimed.

Regarding Applicant's argument that:

"Secondly, although Haq discloses the use of an active routing engine and a backup routing engine within a single router, the combination of Haq with Lydon would merely result in a router that has two internal routing engines. The combination would not in any way affect external links between routers or their components." (See page 11 of Applicant's

Remarks/Arguments filed 11/14/08)

the Examiner respectfully disagrees. Although the teachings of Haq et al. are used in the rejections to disclose a router having both an active routing engine and a backup routing engine, as discussed in the Applicant's arguments, it is the teachings of Lydon et al. that are used to disclose the manner in which the routing engines are connected to one another. As discussed in the rejections of the Final Office Action mailed 8/20/08, it

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would have been obvious to connect the backup routing engines disclosed by Haq et al. in the same manner that the routing engines of Lydon et al. are connected, such that the backup routing engines are connected to form the same type of fully connected topology as the active routing engines. Further, while it may be true that the combination of the teachings of Lydon et al. and Haq et al. may not affect the external links between the routers of Lydon et al., there is no limitation in the claims preventing the first, second, third, fourth, fifth, and sixth links from being the same links. For example, the one link connecting router 50 to router 60 could connect second backup routing engines, as disclosed by Haq et al., to one another, as well as connecting first routing engines, as disclosed by Lydon et al., to one another, thus making the one link perform the function of both the claimed first link and the claimed fourth link. Therefore, the rejection is based on a combination of using links to connect multiple routing engines together forming a fully connected topology, as taught by Lydon et al., with using active routing engines as well as backup routing engines, as taught by Haq et al., with the backup routing engines being connected together in the same manner as the active routing engines, as taught by Lydon et al. This combination is obvious since the use of backup routing engines, as taught by Haq et al. provides the advantage of protecting against the failure of a routing engine, and since connecting routing engines in the manner taught by Lydon et al. provides the advantage of allowing multiple routers to be linked together to form one expanded router having a greater number of inputs and outputs.

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Regarding Applicant's argument that Haq et al. does not disclose the use of redundant router matrices, the Examiner respectfully disagrees. Haq et al. discloses data being switched to either one of two routing engines 201 and 202 and either one of two processing components 205 and 206 (See column 3 lines 11-21 and Figure 2 of Haq et al.). Based on which routing engine and processing component are currently active, input packets are switched to one of the routing engines 201 or 202 and one of the processing components 205 and 206 using a different set of paths, and thereafter, the input packets are switched through routing engine 201 or 202 and processing component 205 or 206 to an output (See column 3 line 65 to column 4 line 43 and Figures 3 and 4 of Haq et al.). These different sets of paths that are used route input packets depending on which routing engine and processing component is currently active correspond to the claimed multiple first router matrix and second router matrix that is redundant to the first router matrix. Thus, Haq et al. does disclose a first router matrix and second router that is redundant to the first router matrix, as claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON E. MATTIS whose telephone number is (571)272-3154. The examiner can normally be reached on M-F 8AM-5:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jason E Mattis
Examiner
Art Unit 2416

JEM

/Jason E Mattis/
Examiner, Art Unit 2416